CLAIMS:

1. An optical data storage medium (10) for recording by means of a focused radiation beam (9) having a wavelength λ and entering through an entrance face (8) of the medium during recording, at least comprising:

- a substrate (1), including a guide groove with a depth g, the guide groove being present at the side of the substrate opposite to the entrance face (8),

- a recording stack (2, 3) of layers on the substrate (1) at the side of the guide groove, which stack includes:

- a write once recording layer (2) of a material having a complex refractive index $\tilde{n}_R = n_R - i*k_R$ at the wavelength λ and having a thickness d_{RG} in the groove portion and a thickness d_{RL} in the portion between grooves, being present adjacent the substrate,

- a non-metallic layer (3) of a substantially transparent material, being present adjacent the write-once recording layer (2),

characterized in that the groove depth g is in the range $(\lambda/655)*20$ nm $< g <$ $(\lambda/655)*140$ nm with λ expressed in nm.

2. An optical data storage medium (10) as claimed in claim 1, wherein the non-metallic layer (3) mainly comprises a material selected from the group of transparent plastic, silicon, oxides of silicon, nitrides of silicon and carbides of silicon.

3. An optical data storage medium (10) as claimed in claims 1 or 2, wherein the wavelength λ is approximately 655 nm.

4. An optical data storage medium (10) as claimed in claim 3, wherein $g < 125$ nm.

5. An optical data storage medium (10) as claimed in claims 3 or 4, wherein $g >$ 50 nm.

6. An optical data storage medium (10) as claimed in any one of claims 3 - 5, wherein the recording layer (2) has a thickness d_{RG} and 145 nm $\leq d_{RG} * n_R < 245$ nm and the non-metallic layer mainly comprises SiO_2 and has a thickness d_T in the range 5 nm $\leq d_T \leq$ 120 nm.

7. An optical data storage medium (10) as claimed in any one of claims 3 - 5, wherein the recording layer has a thickness d_{RG} and 132 nm $\leq d_{RG} * n_R < 220$ nm and the non-metallic layer mainly comprises SiC and has a thickness d_T in the range 5 nm $\leq d_T \leq 60$ nm.

8. An optical data storage medium (10) as claimed in any one of claims 3 - 5, wherein the recording layer has a thickness d_{RG} and 154 nm $\leq d_{RG} * n_R < 264$ nm and the non-metallic layer mainly comprises amorphous Si and has a thickness d_T in the range 1 nm $\leq d_T \leq 20$ nm.

9. An optical data storage medium (20) as claimed in any one of the preceding claims, wherein at least one further recording stack (2', 3') is present adjacent

- a further substrate (4), including a guide groove with a depth g, in the same range as g, the guide groove being present at the side of the further substrate (4) opposite to the entrance face (8),

- the further recording stack (2', 3') including:

- a further write once recording layer (2') of a material having a complex refractive index $\tilde{n}'_R = n'_R - i*k'_R$ at the wavelength λ and having a thickness d'_{RG} in the groove portion and a thickness d'_{RL} in the portion between grooves, being present adjacent the substrate,

- a further non-metallic layer (3') of a substantially transparent material, being present adjacent the further write-once recording layer (2').

10. Use of an optical data storage medium (10, 20) as claimed in any one of the preceding claims, in a standard optical data storage medium recording/reading device suitable for tracking by means of the push pull method onto a guide groove of a standard recordable optical data storage medium, which guide groove is present near a metallic reflective layer.